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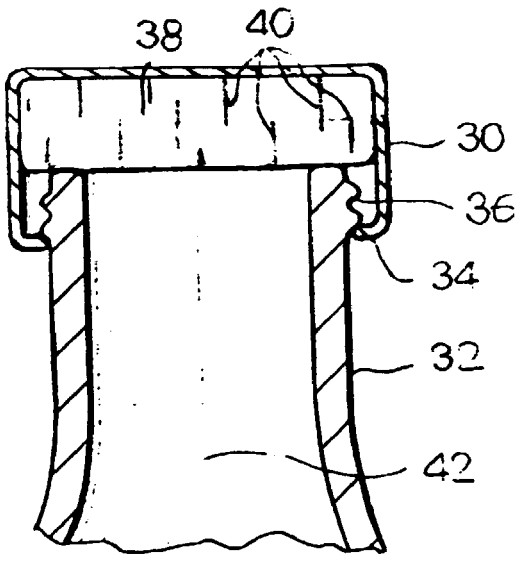
(54) Closing element for food or drink containers

(57) Closing device (30) with screw or bayonet connection for containers of drinks or alimentary products, in particular for bottles of wine, including screw or bayonet connection means (34) devoted to co-operate with corresponding means (36) provided on the container (32), and a seal means (38) that in use is compressed against the rim of a mouth of the container in order to seal-close such mouth.

The seal means includes a product based on natural cork (38,44) placed with its pores or lenticels (40) parallel to the axis (42) of the mouth of the container and inserted into the closing element (30), under radial compression in a direction orthogonal to the length of such pores or lenticels (40).

Fig_3



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Description

[0001] The present invention relates to a closing-up element for containers of drinks or other foods.

[0002] The invention has been developed with particular reference to the closing-up of bottles containing wines, still-wines or sparkling-wines, or champagne as well.

[0003] In the field of the closing-up of wine bottles, the closing-up element with the largest diffusion is the cork stopper. As shown in figure 1,the cork stopper 10 is introduced into the mouth 12 of a bottle by the mean of a bottling machine that press it radial before its introducing inside the neck of the bottle.

[0004] In the traditional cork stopper the pores or lenticels of the cork, indicated as 14 in figure 1,are placed in transversal direction as regards the longitudinal axis 16 of the bottle and of the stopper.

[0005] During the bottling operation, the compression of the stopper 10 is executed on the directions tangential and radial as regards the cork tissue. After completing the introduction of the stopper 10 the seal-closing-up of the bottle should be assured by the mechanical answer that the cork operates on the internal wall of the bottle neck. Since cork is strongly a non-isotropic material, the elastic answer of the stopper 10 varies along the cilyndric surface of contact with the bottle neck.

[0006] More exactly, the elastic reaction of the stopper 10 is bigger on radial direction of the cork tissue, than in the tangential direction of the named tissue.

[0007] Nevertheless the existence of a different elastic reaction along the circumference of the stopper, cork has elastic characteristic strongly higher than those of other materials, as for example, rubber or natural or synthetic resins. More exactly, the cork has a recovery of the deformation following the static compression that is very higher than those of other materials, as for instance those named before.

[0008] Moreover, cork improves the sensorial characteristics of the wine and participates in its ripening during the time with chemical phenomena, one of which concerns the formation of ethyl esters that confer to the wine the flavour of ripened fruit and that are formed between the fat acids contained on the cork and the ethyl alcohol present in the wine.

[0009] While the good mechanical behaviour is a merit both of the natural cork and of the agglomerated cork, it is not possible to say the same thing about the sensorial characteristics of the wine, that get worse strongly in the case in which the agglomerated cork is used as closing-up element, above all if it is in direct contact with the wine.

[0010] The figure 2 shows a closing-up element on bayonet-kind or on screw-kind 18 of known kind used, until now, for the closing-up of container of alimentary preserves. The closing-up element 18 has a body of metal or of synthetic material in which connection gears 20 are formed, suitable to co-operate with corresponding connection gears 22 formed on the external surface of the bottle.

[0011] The connection gears, co-operating each other 20 and 22, create a closing-up, on bayonet-kind or on screw-kind, of the mouth of the container.

[0012] The closing-up element 18 includes, as well, a seal element 24 usually constituted by a disc of foamed synthetic material (for instance polyurethane) that acts as gasket.

[0013] During the use, the seal element 24 is compressed against the higher rim of the mouth of the bottle in order to make a closing-up on seal of the mouth. The closing-up elements of this kind are effective only for short periods of time because the material constituting the seal element 24 suffers a deformation partially irreversible under the action of a static compression during a long period of time.

[0014] This kind of closing-up element, consequently, cannot be used for the closing-up of wine bottles where is necessary to assure the absence of gas exchange with the ambient for a very long periods of time above all because of the high degradability and sensibility of the substance.

[0015] The traditional cork stopper, among the solutions now available, is the one that permits to obtain the best results for the maintenance of wine although this kind of sealing is, now, suffering from several problems. The main problems that happen on its use are in relation with the main characteristics of the cork, and namely, its mechanical behaviour and the sensorial characteristics given to the wine.

[0016] In fact, cork is a vegetable material with very large variability on the values of the main parameters(among which the porosity)that now does not permit to obtain a constant quality. On the other hand, that is imputable also to an old production technology that is not supported by a complete scientific knowledge of the raw material.

[0017] Consequently, with the use of the traditional cork stoppers we often have problems of "leakage" and/or conferment of anomalous off-flavour or taint to the wine.

[0018] Recent experimental studies of the Applicant have demonstrated, among other things, that the leakage happens not only along the glass walls(due mainly to the relatively small diameter of the stopper) but also, slowly, along the axial and tangential directions of the cork tissue.

[0019] Moreover, the traditional cork stoppers are produced using almost the entire thickness of the cork bark, among which also the outer part (close to the so-called back of the bark) that is non-homogeneous and has the tendency of absorbing from the ambient polluting substances, volatile, of weed-killers and chlorinated pesticides, the presence of which, on the outer part of the cork bark, has been proofed.

[0020] Such chlorinated polluting substances give

often origin to the formation of 2,4,6 trichloroanisole that is the main cause of the conferment of anomalous taint to the wine.

[0021] Starting from this state of the art, the present invention proposes the aim to supply a closing-up element that offers seal assurances protracted along the time, better than those of the traditional cork stoppers, avoiding in the same time the present problems of this traditional solution, as well as the limits of the on screw or on bayonet closing-up elements.

[0022] According to the present invention, the named aim is reached by a closing-up element having the characteristics forming the subject of the Claims.

[0023] The present invention shall now be described in detail with reference to the drawings attached, supplied just for example non-limitative, in which:

- figures 1 and 2, already described precedently, show two closing-up elements according to the known technology and, more exactly, figure 1 shows a closing-up element of bottle as natural cork stopper and figure 2 shows a closing-up element on bayonet or on screw for container of alimentary food or drinks,
- figure 3 is an axial section showing a closing-up element according to the present invention,
- figure 3a is an axial section showing the closing-up element according to the invention, before the introduction of the cork-seal-mean,
- figure 4 and 5 are schematic perspective views showing portions of cork bark from which the seal means are obtained according to the invention, compared with the product, or stopper, of traditional kind, and
- figures 6 and 7 are schematic perspective views showing two seal means according to the option shapes of manufacturing of the present invention.

[0024] With reference to figure 3, with 30 is indicated a closing-up element on metallic material or on synthetic material of the kind suitable to create a connection on bayonet or on screw with the neck of a bottle 32. The closing-up element 30 includes, in way itself known, connection gears 34 that co-operate with corresponding connection gears 36 formed on the neck of the bottle 32 in order to create the named connection, on screw or on bayonet.

[0025] In the interior of the closing-up element 30,sufficient in depth, according to the purposes of the present invention, a seal mean 38 is introduced, constituted by a solid of natural boiled cork (as option, also crude or non-boiled) placed with the pores or lenticels 40 parallel to the longitudinal axis 42 of the bottle neck.

[0026] The cork product 38,before of its introduction into the closing-up element on bayonet or on screw, has a diameter higher, up to 100 per cent, of the internal diameter of the closing-up element 30.

[0027] Such value, however, must be understood as just indicative and subject to vary in function of the characteristics of the raw material.

[0028] The thickness of the cork mean 38 can vary as well, in function of the requirements and such thickness must be sufficient to confer to the cork mean the necessary solidity to carry out its function of seal mean. The introduction of the cork mean 38 in the interior of the closing-up element 30 shall be obtained by the mean of a normal bottling machine or other industrial apparatus.

[0029] The fact that the pores 40 of the seal mean 38 are parallel to the axis of the bottle neck, can appear, in a first time, an inconvenience by the point of view of the sealing characteristics. Really, the radial compression of the cork mean 38 is sufficient to create the total closing-up of the pores 40 ,consequently, the cork mean 38 offers seal characteristics for the fluids higher than those of the traditional cork stoppers.

[0030] During the use, the cork product 38 is compressed against the rim of the bottle mouth 32 in consequence of the axial resultant of the turning-motion of the closing-up element 30 relatively to the bottle connection-gears on screw or on bayonet.

[0031] With reference to figures 4 and 5,the seal mean 38 according to the present invention is obtained from a zone of the cork bark that is near to the inner part (the so called "belly"),on the contrary of what happens for a traditional cork stopper 10,for which formation it is necessary use almost the entire thickness of the bark.

[0032] The fact of forming the mean 38 with its longitudinal axis parallel to the pores 40 instead of orthogonal to the pores as happens for a stopper 10 of traditional kind, permits to use a seal mean or gasket with a diameter highly larger than those of the traditional cork stoppers.

[0033] In fact, n this case, the limitation caused by the thickness of the bark, usually small, doesn't exist more.

[0034] As we have seen before, the high diameter of the seal mean 38 permits to create a closing of the pores 40 due to their radial compression. The zone of the cork bark from which is obtained the seal mean according to the invention is free of polluting substances absorbed often already in forest, responsible of the conferment of anomalous taint to the wine.

[0035] Coming back to figure 3,we can observe that when the cork mean 38 is compressed against the rim of the bottle neck, it is submitted along the circular area of contact to a compression strength that is oriented along the radial direction of the cork tissue (direction parallel to the pores 40). This aspect is particularly advantageous because it is the direction with a better mechanical behaviour in respect of those of the axial and tangential directions, being the raw material non-isotropic.

[0036] The seal mean 38 according to the present invention permits, consequently, to obtain an excellent

mechanical behaviour and a high purity of the material. The closing-up element according to the present invention can be used both in the case of still-wines and in the case of sparkling wines, "spumanti" or champagne and in any other case in which we desire to have a closing system that avoid exchanges with the outer ambient during the long period. In the case in which the closing-up element 30,according to the invention, is used for closing bottles containing sparkling wines, spumanti or champagne, it can be covered externally with soft material (as for example synthetic or natural foam)in order to avoid injuries in case of fast expulsion from the bottle of the closing-up element 30 during the opening act.

[0037] The closing-up element 30 can be applied both to glass bottle as well as to container of synthetic material and also to packages of various kind, at condition that they have a mouth-part relatively rigid for the conjunction of a closing-up element on screw or on bayonet.

[0038] In figures 6 and 7 there are shown two variants of the seal mean 38 according to the invention. In the option of figure 6 the seal mean 38 includes a layer of natural cork 44 coupled to a layer of agglomerated cork. The layer of natural cork 44 has the pores placed parallel to the longitudinal axis of the seal mean 38,as in the case described before.

[0039] This option permits to obtain a saving in costs of the raw material more valuable, manteining an excellent mechanical behaviour.

[0040] The layer of natural cork 44 shall be only a fraction as regards the thickness of the cork product complete.

[0041] The thickness of the layer of agglomerated cork 46 confers, anyway, to the seal mean 38 the necessary solidity that permits the radial compression of the mean in a bottling machine. The part of natural cork 44,during the use, is faced to the interior of the container, consequently, we avoid any contact between the alimentary product and the agglomerated cork.

[0042] In the option of figure 7 the product 38 is formed by two or more solids 48 of cork, bound each other, that have the orientation of the lenticels or pores always parallel to the axis of the named product. As for the other cases described before, its section can be circular or with any other geometry (for example square, octagonal, triangular, and so on).

[0043] Of course still-standing the principle of the invention, the particulars of construction and the shapes of realisation can be largely varied as regards that described and shown, without for that, go out of the ambit of the present invention.

Claims

1. Closing-up gear (30) for containers of drinks or alimentary products, in particular for bottles of wine, including connection means on screw or on bayonet (34) devoted to co-operate with corresponding means (36) provided on the container (32), and a seal mean (38) that in the use is compressed against the rim of a mouth of the container in order to seal-close such mouth, characterized in that the named seal gear includes a product on natural cork (38,44) placed with its pores or lenticels (40) parallel to the axis (42) of the mouth of the container and it is inserted into the closing-up element (30), consequently of an its radial compression in direction orthogonal as regards the length of such pores or lenticels (40).

2. Closing-up element according to claim 1, characterized in that the product of cork (38) is compressed radial before its introducing into the sufficient deepness of closing-up element (30) in order to create the complete closing of its pores or lenticels.

3. Closing-up element according to claim 1, characterized in that during the use, the named seal mean (38) is placed in such a way as the strength of contact with the rim of the mouth of the container is directed according to radial direction of the cork tissue forming the seal mean (38).

4. Closing-up element according to claim 1, characterized in that the product of cork (38) includes a layer (44) of natural cork laid upon a layer (46) of agglomerated cork.

5. Closing-up element according to claim 1, characterized in that it is supplied of a covering of soft material on its external surface.

6. Closing-up element according to claim 1,characterised in that the seal gear (38) is formed by two or more layers of natural cork (48) bound each other or simply laid upon.

7. Closing-up element according to claim 1, characterized in that the seal gear (38) has a circular or polygonal section.

8. Closing-up element according to claim 1, characterized in that the seal gear is formed by a product of boiled cork or, as option, crude cork or non-boiled.

Fig_1

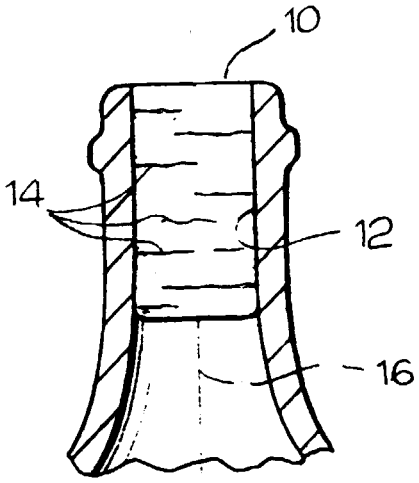


Fig_2

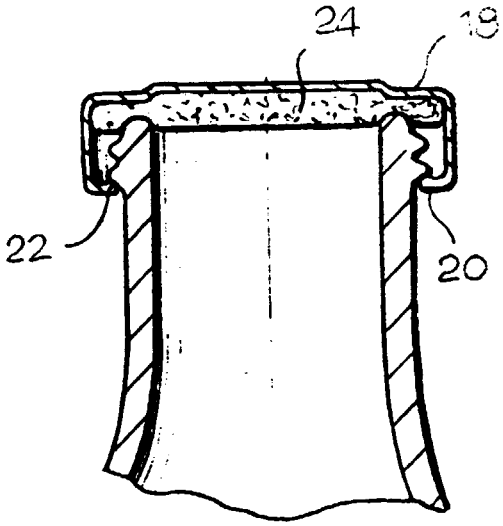


Fig_3

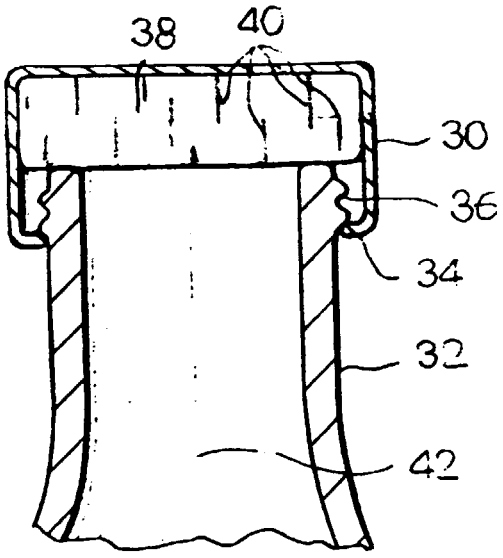


Fig_3a

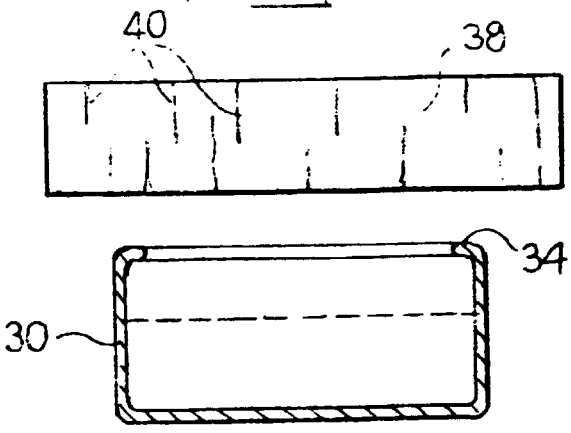


Fig_4

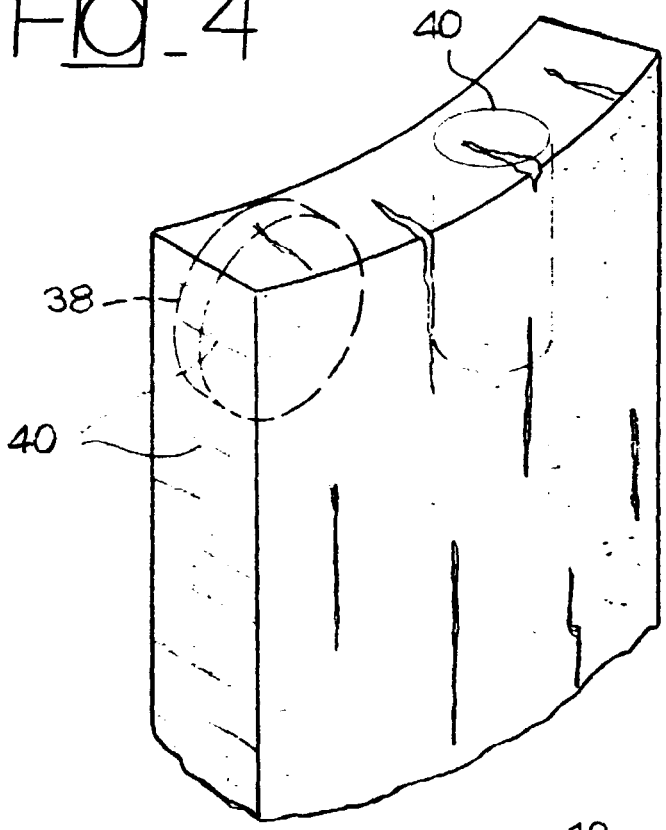


Fig_5

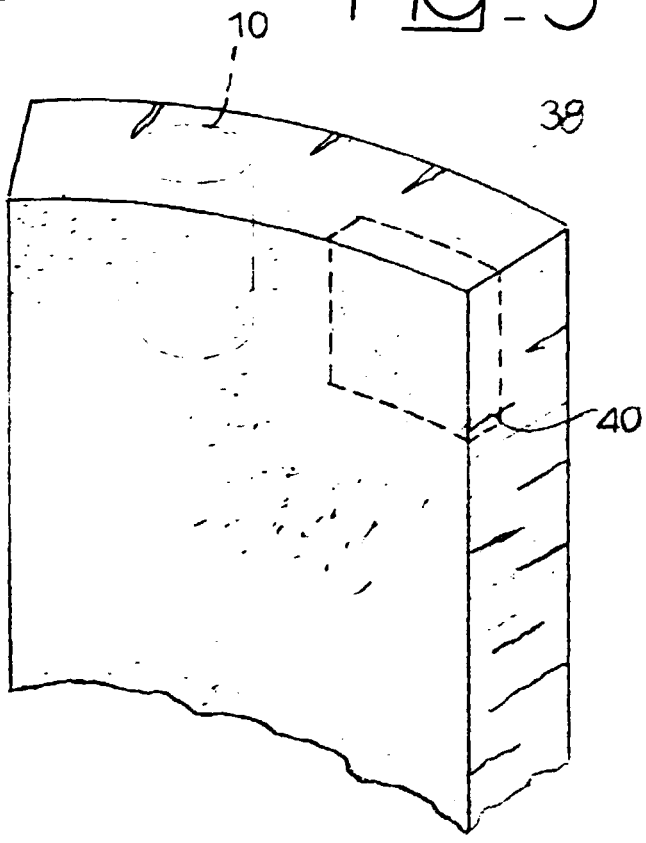


Fig_7

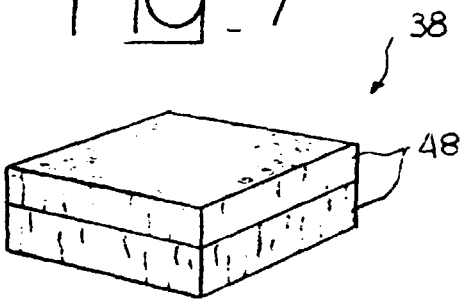
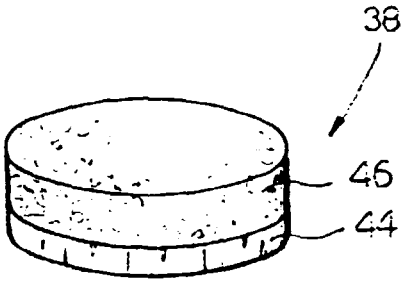


Fig_6



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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 8697

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y A	GB 228 081 A (ANDERSON) * page 1, line 28 - line 40 * * page 2, line 60 - line 65; figures 1,2 *	1 2,4,7,8	B65D53/04
Y A	DE 120 771 C (SCHROEDTER) * claim 1; figures 2-4 *	1 7,8	
A	US 1 361 225 A (BRUNS) 7 December 1920 (1920-12-07) * claim 1; figure 1 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 October 2000	Bridault, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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19-10-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 228081 A		DE 429592 C	
DE 120771 C		NONE	
US 1361225 A	07-12-1920	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82